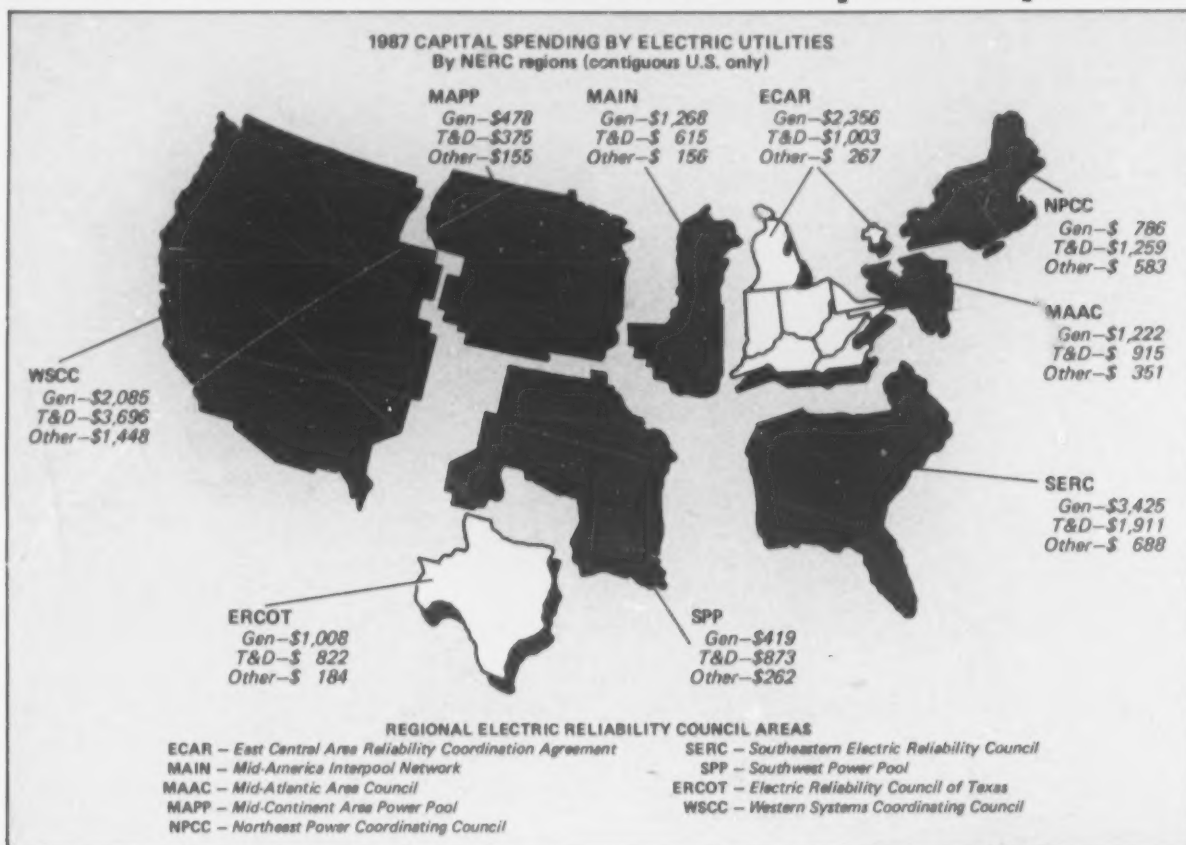


Electric Light & Power

THE NEWS MAGAZINE OF ELECTRIC UTILITY MANAGEMENT AND TECHNOLOGY

A CAHNERS PUBLICATION

Electric utilities increase capital spending programs



BARRINGTON, IL— Utilities will spend \$28.6-billion for new and upgraded facilities in 1987. While this represents a \$2.1-billion decrease from estimated 1986 capital expenditures of about \$30.7 billion, it is nearly \$2-billion more than projected for 1987 just a year ago.

For the five years 1987-1991, total capital expenditure are projected at \$125-billion.

For 1987, generation spending will total \$13-billion, transmission and distribution investment will run \$11.5 billion and other spending will total \$4.1-billion.

The full 1987 capital spending survey report begins on page 11

According to *EL&P's* 1987 projections, generation investment will drop to \$51-billion for the five years, \$12 million less than called for in last year's forecast. Transmission and distribution expenditures, are projected to be \$55.4-billion for the 1987-1991 period, up from \$53.9-billion for the 1986-1990 period. Other capital expenditures are estimated at \$18.5-billion, \$13-billion up from the previous five-year forecast.

The study also revealed that only one in five utilities is actually involved in carrying out life extension work, although a number are involved in studying potential projects.

North American winter peak demands expected to increase

PRINCETON, NJ—North American winter peak electricity demands are expected to increase moderately over last year's demands, according to a new forecast from the North American Electric Reliability Council.

However, said NERC, utilities will have enough electricity to meet those demands.

Expected to exceed

Winter peak demands are expected to exceed last year's by 3.3 percent in the U.S., 2.5 percent in Canada, and 4.8 percent in Mexico. (See table.)

ECAR	3.3
ERCOT	8.5
MAAC	3.4
MAIN	0.2
MAPP-U.S.	7.9
NPCC-U.S.	2.4
SERC	-3.7
SPP	1.3
WSCC-U.S.	4.1
NERC-U.S.	3.3

Source: NERC Winter Assessment (86-87)

NERC compiled its forecasts from projections made by North American electric utilities.

The highest forecast increase of 8.5 percent is expected in the ERCOT region, which includes most of Texas.

"In several areas," noted NERC in its *Winter Assessment* report, "the transmission system will continue to be loaded up to its reliability limits by transfers of lower cost electricity."

NERC reports that the most critical limitations will occur in the central to eastern areas of Pennsylvania, in the Southwestern U.S. from Arizona to southern California, and in portions of the Southwest Power Pool and the Southeastern Electric Reliability Council.

Among specific areas of the country, NERC said it appears that the Tennessee Valley Authority will go through the winter with no nuclear plants on line, causing capacity margins to be lower than desired.

The council said transfer capabilities will be increased between the SERC and MAAC regions when a new section of the 500-kV Baltimore-Washington loop is completed in the near future.

Also, some transmission limitations are possible in the Rocky Mountain Power Area.

Four major generating units, total-

Continued on page 32



Operation of the first unit of Texas Utilities' Comanche Peak nuclear plant was recently pushed back to early 1989, causing the plant's total cost estimate to increase by approximately \$2 billion.

Comanche Peak plant delayed; cost increases to \$6.7 billion

DALLAS—Texas Utilities Electric Company (TUEC) delayed the start-up of its Comanche Peak nuclear plant and increased its most recent cost estimate by about \$2 billion.

Unit 1 of the plant is expected to be in operation in early 1989. Unit 2 will not be ready for commercial operation until after the summer of 1989, said the company. The previous estimate, announced in November 1985, assumed Unit 1 would start-up in mid-1987 and Unit 2 six months later.

In addition, the company said the plant's cost estimate rose to \$6.70 billion or \$3,300 per kilowatt, from its previous estimate of \$4.64 billion or \$2,297 per kW.

Moody's Investors Service said it was reviewing TUEC's debt and preferred stock ratings for possible downgrade. It noted that a cost increase announcement from the utility was expected, but the size of the increase was not.

Continued on page 32

OR voters defeat proposal prohibiting nuclear plant operation

● In the November election, Oregon voters defeated by a 2-to-1 margin a proposal that would have prohibited the operation of any nuclear plant in the state until a permanent federal high-level nuclear waste site is completed. If passed, Measure 14 would have forced Portland General Electric to close its Trojan nuclear plant by Dec. 4. A citizen's group against the proposition raised more than \$700,000 to defeat the measure. According to *The Wall Street Journal*, PGE contributed \$661,000 of the total amount collected.

Alabama Power markets appliances for blind, handicapped

● Alabama Power Company is now marketing home appliances for the blind and physically impaired. According to the company, the appliances, designed by Whirlpool Corp., feature braille overlays, oversize knobs and large-print graphics along with instruction booklets in braille and on audio cassettes. "This is a major effort to reach customers with physical handicaps—ranging from blindness to arthritis and related limitations," stated Alabama Power Vice President of Marketing Sam H. Booker. "These appliances offer an efficient answer to a very practical problem faced by many customers."

Puget Power maps owls living near small hydro project sites

● Puget Sound Power & Light Company Environmental Scientist Mel Walters, uses a radio receiver to home in on a spotted owl that lives near the site of several proposed small hydroelectric projects. The licensing process for the hydro projects requires an environmental review of the area. As part of the review, Puget Power has been mapping the habitat of a pair of spotted owls for the past three years in the Baker River Basin in northwest Washington state. The owls were captured earlier and fitted with tiny radio transmitters. Only about 600 spotted owls, which live in old-growth forests, survive in Washington state. As of December, four of Puget Power's license applications were pending, one was surrendered and one permit was surrendered, according to the company.



WP&L seeks PSC approval to form holding company

● Wisconsin Power & Light Company (WP&L) said it is awaiting approval from the Public Service Commission of Wisconsin on its request to form a holding company. Under the proposal WP&L will be a subsidiary of the holding company. "A holding company structure provides for the separation of utility and non-utility operations and allows the flexibility to operate in non-traditional, competitive arenas," said WP&L CEO James Underkofler. "We will, however, continue to focus on the utility operation as our primary business," he added. Underkofler noted that shareholder approval for the reorganization will be sought at the utility's annual meeting in April and anticipates that the holding company will be in operation by the end of July.

GPU notifies NRC of progress in TMI-2 plans

● GPU Nuclear Corporation said it recently notified the U.S. Nuclear Regulatory Commission of its plans for completion of the cleanup program at Three Mile Island Unit 2. The company said the plant will be in Post-Defueling Monitored Storage (PDMS) at the end of the program, which should be completed in approximately two years at a cost of about \$1 billion. TMI-2 Director Frank Standerfer said the plant will eventually pose no risk to the health or safety of the public. "Many of the cleanup challenges already have been met successfully. And while today there still is much work to be done, the cleanup program is making good progress toward completion. The primary goal of the program has been to establish a safe, stable and secure facility," he said. Defueling at the plant, now underway, will remove about 100 metric tons of damaged fuel and 50 metric tons of damaged internal components that will be shipped from the site. The utility said a small amount of fuel will remain at various locations in the plant, mostly in enclosed systems.

Edison's Byron 2 receives operating license from NRC

● According to Commonwealth Edison, Unit 2 of its Byron generating station has been granted an operating license by the Nuclear Regulatory Commission. The license allows Edison to start loading fuel at Unit 2. When loading is completed, low power testing will begin and power levels will be increased to five percent capacity after successful lower level performance, stated the utility. Edison expects the unit to be at full power by next summer.

PSNH declines to appeal PUC's decision on Pilgrim Two

● Public Service of New Hampshire (PSNH) said it has decided not to appeal the New Hampshire Public Utilities Commission's decision denying the company's request to recover its \$16 million investment in the canceled Pilgrim Two power plant. "We want our customers to know that we are totally committed to our...proposal to keep electricity prices down," stated PSNH President and CEO Robert J. Harrison. PSNH had been pursuing recovery of its Pilgrim Two investment through a test, before the New Hampshire Supreme Court, of the constitutionality of the state's anti-CWIP law. The law had earlier been found, on other grounds, to bar any recovery for abandoned/canceled plants, according to the utility.

Three utilities honored for environmental conservation efforts

● The National Institute for Urban Wildlife presented three investor-owned electric utilities with its "Outstanding Industry Conservation Award", for their "significant contributions to environmental conservation." Baltimore Gas & Electric Co. was recognized for operations at its Crane Aquaculture Facility, Carolina Power & Light Co. was commended for its management of the land around the Shearson Harris nuclear power plant, and Potomac Electric Power Co. was cited for its wildlife management program at the Chalk Point Power generating station. This marks the first time electric utilities have received the conservation award, according to the institute.

Virginia Power wins DOE award for solar energy project

● Virginia Power's solar energy project received an award from the Department of Energy's National Program for Energy Innovation. The 60-kW solar photovoltaic project is currently generating electricity at the utility's North Anna Power Station. "This award recognizes our company's commitment to explore advanced technologies," said Virginia Power Senior Vice President of Corporate Technical Assessment Sam Brown. "Someday these sources may provide us more efficient use of less costly energy."

PP&L requests a \$32 million rate reduction

● Pennsylvania Power & Light Company (PP&L) has proposed a \$32 million decrease in its electricity rates, according to the utility. If the request is approved by the Pennsylvania Public Utility Commission, PP&L said its customer charges would fall by an average 1.8 percent. The company cites lower federal income taxes, changes in the state tax surcharge and an increase in the Energy Cost Rate as reasons for the request.

NARUC elects officers at annual convention

● The National Association of Regulatory Utility Commissioners (NARUC) elected officers at its 98th annual convention in Phoenix, AZ. Peter Bradford, chairman of the Maine Public Utilities Commission, was chosen as president and North Dakota Commissioner Bruce Hagen was named as 1st vice president and chair of the executive committee. Appointed 2nd vice president was South Carolina Public Service Commissioner Henry Yonce and Paul Rodgers was elected to his 22nd term as administrative director and general counsel of the NARUC.

Westinghouse relocates combustion turbine unit

● Westinghouse Electric Corporation recently announced plans to relocate its combustion turbine operations from Concordville, PA to Orlando, FL. Energy Systems Executive Vice President Theodore Stern said the transfer will take place over a six- to nine-month period. He said a severely depressed world market, increased global competition, and financial losses have adversely affected the combustion turbine business over the past few years. "Consolidation of our combustion and steam turbine activities provides a much broader base of technical skills and personnel to support our customers with their power generation needs," he said. A number of the 230 Concordville personnel will be transferred to the Orlando generation technology systems division.

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EL&P readers whose responsibilities include both Generation and Transmission/Distribution receive both technology sections. Other readers receive the technology section that applies to their respective area of responsibility. The Generation edition is indicated by a single dot (*) in the upper right corner of page 1; the T/D edition carries two dots (**). All readers receive EL&P's industry news section.

1987: A happier, better year!

Forecasts of capital expansion and upgrading in 1987 remain something less than bright for suppliers to the electric utility industry. The simple fact is that the industry's capital spending plans indicate another year of decreased spending, down about 7 per cent from 1986, which wasn't a year to write home about itself. But there are areas of encouragement...if one looks far enough.

The first plus is that the forecast for 1987 capital investment is about 6.5 percent above the '87 forecast made a year ago. Moreover, after the strong financial performance most electric utilities recorded in 1986, more utilities stand in a good position to live up to their projections and plans.

The second plus is that both transmission and distribution spending projections are up, both in relation to what was projected for last year and for this. Manufacturers of T&D equipment and apparatus should enjoy a solidly improved year in 1987. With interest rates at their lowest levels in a number of years and housing starts continuing strong, distribution system construction seems sure to remain active. And with increasingly heavier loadings for economy interchanges on a regular basis, transmission tie-lines will have less and less capacity for emergency backup. That means new transmission lines will be required in the near-term and projects will have to be engineered and started this year.

Although new generation investment in 1987 will decline, both in total dollars and as a proportion of total spending, there are a couple of bright spots. Major hydro projects subject to federal relicensing will need to be at least partially re-engineered to meet current federal requirements. Some may need substantial facilities improvements, beginning this year. And more and more utilities are becoming involved in life extension programs, beginning with economic and engineering studies, but then moving to the implementation stage.

And more utilities are investing capital in new ventures and diversified operations. With construction budgets now at manageable levels, and improved cash flows, many utilities will move more actively to find financially attractive diversifications to help pad the return on shareholder investment.

Thus, for most of the industry—utilities, architect/engineers and manufacturers—1987 should be a better year than we've had for quite a while.

To our electric utility readers, we wish you a year with no big surprises... moderate, but steady load growth with no storm-blown or heat-seared outages and no adverse regulatory decisions. For our regulatory agency readers, we wish you perception, persistence and patience to seek and arrive at decisions that will favor no special interests, but be totally fair to all. And to our supplier and advertiser friends and associates, we join with you in hoping for a better year, when the logic of utilities' realistic needs for new and improved system operations will be translated into orders for new equipment and where all the segments of the industry can once again work together, day by day, to build and rebuild the systems that will be needed to meet the demands of an increasingly electrified future.

Finally, to all we can wish you no greater blessing than that 1987 be a year of personal progress, good health, happiness and ...peace!

Asbestos-removal workshop set

BARRINGTON, IL—A special workshop probing the asbestos-removal requirements of electric utilities—and how to meet them—will be conducted February 10-11 at the Indian Lakes Resort, Bloomingdale, IL. The session, which is sponsored by the School of Public Health of the University of Illinois, will feature speakers from the Environmental Protection Agency, contractors and utilities, as well as public health specialists from the University. There will be no fee for the workshop.

Goal of workshop

According to Dr. John J. Gammuto, who is organizing the workshop, the goal of the workshop is to maximize

the dialog between participants, focusing on the specific operational requirements of utilities that prevent asbestos-removal methods considered standard for commercial and public buildings from being employed. "Ultimately, as an outgrowth of the workshop exchange" he said, "we would hope to develop a training program for utilities aimed at showing them just how to remove asbestos from power plants safely, legally and economically, without affecting plant operations."

Interested readers may obtain more information by phoning either Dr. Gammuto at (312) 969-5959 or Ms. LaWanda Tucker at the University of Illinois, (312) 996-5762.

'86 utility financings more than doubled

NEW YORK—Investor-owned utilities financings rose to \$28-billion in the first nine months of 1986, more than double the amount for the same period in 1985. Electric utilities, according to Ebasco Business Consulting Co., were responsible for \$17.4-billion of this amount, which reflects an increase of 78 percent from the same period a year earlier.

The majority of financing activity, representing 93 percent of total security offerings in the period, was in the form of long-term debt, which rose by

135 percent to \$26.1-billion. Electric utilities' share of this total was 60 percent.

Sales of preferred stocks increased in the period, while common stock sales declined.

Of the total \$28-billion financing, 70 percent, or \$19.6-billion, was through negotiated sales, while 27 percent was via competitive bidding and 3 percent was sold privately.

About 59 percent of the money raised, amounting to \$16.4-billion, was used for refunding.

SECURITY OFFERINGS—1/1-9/30

	1986		1985	
	Total	Electric	Total	Electric
Long-term Debt:				
Offered Publicly	25,204,650	15,209,650	10,876,305	7,903,805
Offered Through Subscription	0	0	0	0
Offered Privately	864,000	441,500	241,582	191,582
Preferred Stock:				
Offered Publicly	1,183,000	1,183,000	445,000	445,000
Offered Through Subscription	0	0	0	0
Offered Privately	0	0	0	0
Common Stock:				
Offered Publicly	762,695	531,945	1,790,097	1,218,196
Offered Through Subscription	0	0	0	0
TOTAL FINANCING	28,014,345	17,366,095	13,353,858	9,821,583
Purpose				
Total Refunding	16,460,562	9,227,280	3,495,395	2,016,885
Total New Money	11,553,783	8,138,815	9,858,463	7,804,698
Type of Financing				
Competitive	7,559,964	4,843,245	1,993,685	1,385,685
Negotiated	19,590,381	12,081,350	11,176,591	8,244,316
Subscription	0	0	0	0
Private Sale	864,000	441,500	241,582	191,582

Directors consider resigning, says survey

NEW YORK—One-third of the over 1100 directors of major U.S. corporations responding to a recent survey say that the increased liability to which they are exposed has caused them to consider resigning from their board positions.

The Touche Ross survey also found that the longer directors serve on boards, the more likely they are to consider resigning for this reason.

Increased liability will also make it more difficult to keep boardrooms full in the future, said survey respondents. Ninety-three percent of the directors polled believe that increased liability will make it more difficult to recruit talented, experienced people to serve on boards.

Intense concern

Richard H. Murray, general counsel for Touche Ross said, "The frequency and quality of responses to the survey are dramatic evidence of

the intense concern directors have about the changing demands of corporate stewardship and the uncertainties which increase their burdens."

Almost one-third of the directors think the bankruptcy rate for companies with sales of \$1 billion or more will increase in the coming year. They said the industries most vulnerable are energy, banking and steel.

Most optimistic

Directors living in the Southeast and the Middle Atlantic states are the most optimistic about the U.S. economy, with most saying the economy is growing slowly. Those living in the Southwest and the Rocky Mountain areas are more likely to describe the economy as stagnant.

For copies of the survey, *Issues Facing U.S. Corporate Directors*, write or call Mary Abdo, Touche Ross, 1633 Broadway, New York, NY 10019 (212) 489-1600.

Electric Light & Power

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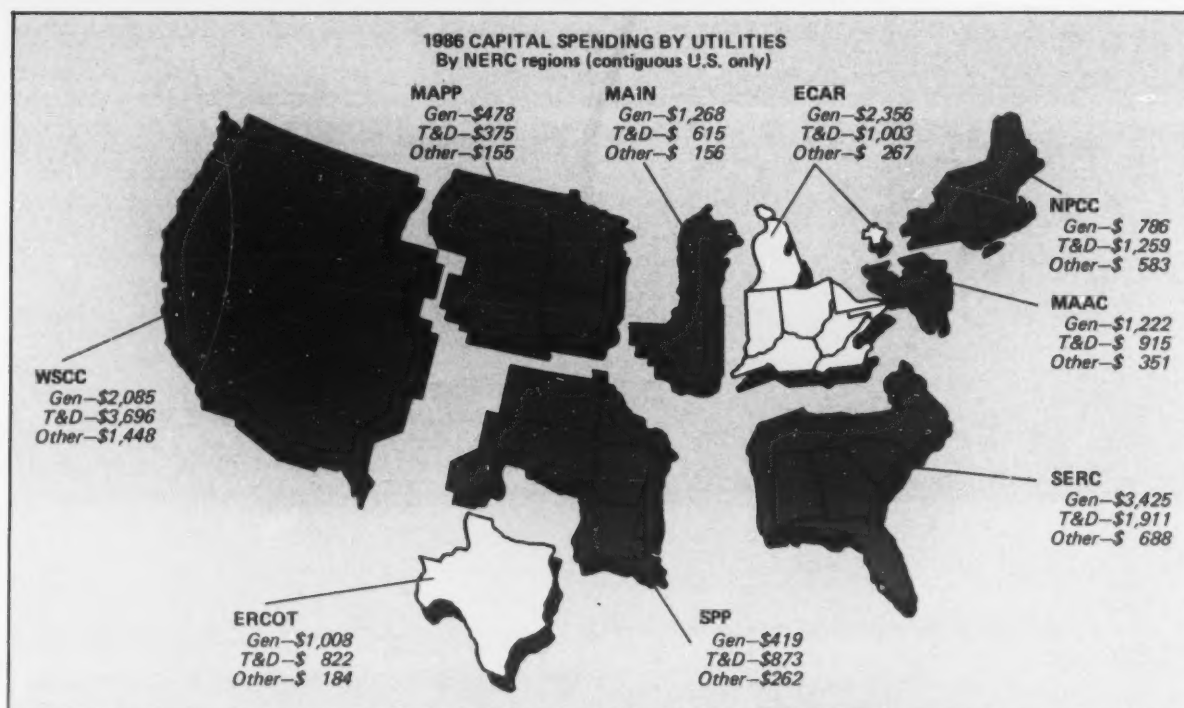
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ELECTRIC LIGHT & POWER (USPS 858-860) is published monthly by The Cahners Publishing Company, A Division of Reed Publishing USA, 275 Washington St., Newton, MA 02158-1630. William M. Platt, President; Terrence M. McDermott, Executive Vice President; Robert T. Brawn, Group Vice President; Jerry D. Neth, Vice President/Publishing Operations; J.J. Walsh, Financial Vice President/Magazine Division; Thomas J. Dellamaria, Vice President/Production and Manufacturing. Editorial offices at 1301 S. Grove Ave., P.O. Box 1030, Barrington, IL 60010. Phone (312) 361-1840. Second-class postage paid at Barrington, IL 60010.

and at additional mailing office. Distributed gratis to executives and engineers in U.S. electric utilities and consulting engineering firms. ELECTRIC LIGHT & POWER copyright 1986 by Reed Publishing USA. Saul Goldwintz, Chairman; Ronald G. Segel, President and Chief Executive Officer. Annual subscription rates for non-qualified people: \$38 (USA), \$46 (Canada), \$66 (foreign, surface mail), \$108 (foreign, air mail). Single copy prices: \$4 plus postage (US); \$5 plus postage (Canada); \$7 plus postage (foreign). Postmaster: Send address change to ELECTRIC LIGHT & POWER, P.O. Box 1030, Barrington, IL 60010.



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1987 capital spending survey report

Electric utilities to spend \$28.6-billion in '87, reductions in 5-year spending plans decline

Robert A. Lincicome, Editor in Chief

Capital spending by U.S. utilities—investor-owned, federal, district, co-op and municipal—will invest \$28.6-billion in new and upgraded facilities in 1987. While representing a decrease from 1986 spending, the new projection reflects an increase in utility spending plans for the year from projections made a year ago.

And for the five year period, capital spending plans reflect a similar strengthening. The five-year total is \$125-billion.

These projections were based on *Electric Light & Power's* most recent annual survey of electric utilities. The survey was completed in November, 1986.

The degree of improvement can be seen easiest by looking at the years 1987-1990, which were covered on both last year's and this year's studies. Last year's projections for those four years showed capital spending plans totalling \$92.1-billion. For those same four years, this year's study indicates that utilities will invest \$103.7-billion. This represents a gain of \$11.6-billion or 7.9 percent. It breaks down to an average increase of more than \$2.8-billion per year.

As might be expected, the current study pointed up the continuing decline in spending for generation additions, reflecting the current over-capacity and low load growth prevailing in the industry. It also shows a strengthening in transmission and distribution system expansion and upgrading, although specified substation investment is off from the previous forecast period.

Substantial increase

This year's study also showed a substantial increase in capital investment in the "other" category. This development reflects a basic change in the prevailing pattern of spending over the past decade and is an indication of many utilities' programs of diversification and spending for non-operating system facilities.

NORTH AMERICAN ELECTRIC RELIABILITY COUNCILS	
ECAR	East Central Area Reliability Coordination Area
ERCOT	Electric Reliability Council of Texas
MAAC	Mid-Atlantic Area Council
MAIN	Mid-America Interpool Network
MAPP	Mid-Continent Area Power Pool
NPCC	Northeast Power Coordinating Council
SERC	Southeastern Electric Reliability Council
SPP	Southwest Power Pool
WSCC	Western Systems Coordinating Council

1987 CAPITAL SPENDING BY NERC REGION (CONTIGUOUS U.S. ONLY)						
(in millions)						
Region	Generation	Substation	Transmission	Distribution	Other	Total
ECAR	\$ 2,356	\$ 63	\$ 230	\$ 712	\$ 267	\$ 3,626
ERCOT	1,008	6	250	566	184	2,014
MAAC	1,229	285	108	521	351	2,488
MAIN	1,268	63	189	362	156	2,039
MAPP	478	54	87	234	155	1,008
NPCC	786	257	268	734	583	2,628
SERC	3,425	168	543	1,200	688	6,024
SPP	419	60	264	548	262	1,554
WSCC	2,085	434	941	2,321	1,448	7,229
Total	\$13,047	\$1,391	\$2,880	\$7,198	\$4,094	\$28,610

CHANGING INVESTMENT PATTERN					
1987 - 1991					
	1987	1988	1989	1990	1991
Generation	45.6%	41.9%	39.8%	38.4%	36.9%
T&D	40.1%	43.5%	45.8%	46.7%	46.9%
Other	14.3%	14.6%	14.4%	14.9%	16.2%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

The electric utility industry plans to spend some \$28.6 billion for new and upgraded facilities in 1987. While this reflects a decrease from projected capital spending of \$30.7-billion in 1986, it nevertheless represents a 6.5

percent increase in spending plans for the year as projected a year ago. Actual 1986 spending figures will not be available until later this year.

The improvement over earlier projections of 1987 capital spending

plans reflects the continuing excess generation capacity that developed over the past five or six years, plus increased spending for power delivery and other system facilities and resources.

According to projections made on the basis of returns to *EL&P's* capital spending plan survey, electric utilities will invest \$13.05-billion in generation facilities in 1987. This will be 7 percent less than planned a year ago for 1987 projects and a decline of 24 percent from projected expenditures in 1986. This cutback in generation spending reflects the excess reserve margins that continue to plague utilities in the face of lower-than-expected load growth.

Bulk of spending

The bulk of generation spending will be devoted to projects currently in-process and to an increasing number of life extension and upgrading projects.

Although about 35 percent of the nation's major utility organizations report they are involved with life extension projects, the majority are still in the "study" stage. Life extension projects could represent a growing share of capital investment in power generation over time. However, at the present time there still is a lot more looking and talking about life extension than there is real work. Responses to *EL&P's* survey indicate this situation will change gradually over time.

Spending for power delivery facilities is projected at \$11.5-billion in 1987. This is made up as follows: substation construction—\$1.39-billion, transmission construction—\$2.88-billion, and distribution construction—\$7.20-billion.

It should be noted that although total capital expenditures in 1987 are substantially lower than projected actual spending in 1986, this is not true for transmission and distribution. Both categories of projects are up from 1986 by about \$250-million.

Continued on page 12

Capital spending report . . . from page 11

Substation construction programs, however, will be smaller in 1987 than in 1986. Overall, however, power delivery programs will represent 40.1 percent of total capital spending, up from 38.4 percent in 1986.

Overlapping

Substation capital investment is understated by an unknown amount. A number of utilities replying to *EL&P's* survey request included substation construction and investment in either transmission or distribution spending plans (or both). Similarly, capital programs for transmission and distribution tend to be overstated. Because of this overlapping, the three categories of spending are grouped in subsequent discussion and the over- and under-statements cancel each other out.

Miscellaneous capital spending programs continue to increase and in 1987 will total almost \$4.1-billion. This category of capital investment has run around 5 percent of total capital spending in the past, but reflects a gain of more than 100 percent in 1987 and is projected to run in excess of 14 percent of total capital spending over the five-year period.

1988-1991 capital spending

Spending for generation facilities is expected to continue downward over the remaining four years of the survey period, falling to \$11.3 billion in 1988, \$9.6-billion in '89, \$9.1-billion in '90 and, ultimately, \$7.9-billion in 1991. As a percentage of total capital spending, generation investment will drop to about 42 percent in 1988 and continue slipping until it hits about 37 percent in 1991.

Conversely, capital investment in power delivery facilities should continue relatively strong, in excess of \$11-billion, until 1991, when it could fall to just under \$10-billion. It is projected that transmission activity over the period will be based on the increasing need to strengthen tie-lines, first for reliability purposes, then for continued expansion of economy interchanges of power. Existing tie-lines increasingly are being used for

economy transactions, which means that emergency backup is not available to the same degree as formerly. Without substantial new generating capacity coming on line, the need for substations and additional transmission lines will be to improve reliabilities by strengthening and upgrading existing circuits and building new ones. This construction should subsequently stimulate additional use of the augmented facilities for further capacity interchanges in order to postpone new generation investment.

Distribution spending, representing by far the lion's share of power delivery system investment, will continue to be driven by residential and commercial construction activity. With continuing low interest rates and relatively stable construction labor rates and materials costs, this stimulus to distribution expansion should continue, although moderating slightly by the end of the period.

"Other" spending increases

One area where a marked increase in capital investment projections occurs is in the "Other" category.

In past years, the majority of investment in this classification of capital spending consisted of headquarters and other office and service facilities, certain capitalized fuel resources and the like. Over the past decade, this classification of capital investment has run between 4 percent and 5.5 percent of the total.

For the period running from 1987 through 1991, "Other" capital spending for facilities and resources that do not fit into the generation, substation, transmission or distribution categories will average about 14.5 percent. Included are utility investments in facilities and resources involved in broadened diversification programs.

Projected spending by regions

Regional patterns of capital investment and construction will follow population movement and general business activity. Figures for regional spending are expressed in millions of dollars in the following tables.

ECAR



	Gen	T&D	Other
1987	2,388	1,003	267
1988	2,084	961	267
1989	2,088	1,000	176
1990	1,608	1,004	163
1991	846	825	96
5-yr total	8,898	4,793	861

Utilities in the East Central Reliability Coordination area will spend \$14.59-billion for system expansion in the years through 1991. During the period, generation spending will decline steadily, from \$2.36-billion in 1987 to less than \$1-billion in 1991. Spending for transmission and distribution will remain fairly constant.

About half the utilities in ECAR currently are involved in life extension studies, but only a few are actively engaged in life extension projects.

ECAR utilities plan to add several small peaking and intermediate-size generation units prior to 1995 and several large coal-fired baseload units between 1996 and 2000.

ERCOT



	Gen	T&D	Other
1987	1,008	822	184
1988	1,391	968	173
1989	682	380	130
1990	681	334	159
1991	584	303	162
5-yr total	4,366	2,707	808

Texas utilities will invest almost \$7.9 billion for new plant and system in the next five years, with the heaviest investment, \$2.4-billion to be spent, better than half will go into new generation facilities and a third will go to meet substation, transmission and distribution needs. The balance, about 11 percent, will go for other purposes.

In general, about 25 percent of ERCOT utilities are involved in life extension projects, with additional utilities currently studying potential life extension programs for feasibility.

Some small, under 100 Mw, generating units will be added mostly in the 1990s. There also is potential for several large baseload units to be added in the latter years of the century.

MAAC



	Gen	T&D	Other
1987	1,222	914	351
1988	1,277	865	461
1989	1,184	760	437
1990	1,034	848	422
1991	625	613	267
5-yr total	5,342	3,990	1,938

Mid-Atlantic Area Council utilities will invest \$11.3 billion for new facilities in the next five years. About 47 percent of this capital investment will

go for new and upgraded generation facilities, fairly evenly spent over the first four years, then dropping about 50 percent in the fifth year. T&D spending for the five-year period will total almost \$4-billion or 35 percent.

MAAC utilities will need new capacity after 1992, with unit sizes ranging from 50 Mw to more than 600 Mw.

Most MAAC utilities are involved in life extension studies and more than one-half are working on specific active projects.

MAIN



	Gen	T&D	Other
1987	1,288	615	198
1988	708	671	145
1989	348	648	120
1990	354	671	124
1991	188	328	85
5-yr total	2,873	2,834	631

Utilities in the Mid-America Interpool Network, comprised of utilities in Illinois, Eastern Wisconsin and Northeastern Missouri, will invest almost as much capital in power delivery facilities (\$2.8-billion) as in power generation facilities (\$2.9-billion) during the next five years. In fact, after 1987, when current generation projects are completed, they will spend \$600-million more for T&D than for generation.

Only about a fourth of MAIN utilities are involved in life extension projects, but a number have begun or are carrying out studies that may lead to prospective active projects within the next several years.

New capacity will not be needed until the mid-1990s. While there is a potential for one or more 400-600 Mw units to be added in the latter years of the century, the majority of utilities replying to *EL&P's* survey evidenced interest in peaking units, rated below 100 Mw.

MAPP



	Gen	T&D	Other
1987	478	378	155
1988	326	421	153
1989	429	268	198
1990	388	385	182
1991	338	379	152
5-yr total	1,970	1,929	678

The Mid-Continent Area Power Pool is the smallest of NERC's regions. Utilities in this area will invest \$4.7-billion for new facilities over the next five years, with generation spending (\$1.97-billion) barely topping transmission & distribution investment (\$1.93-billion).

Only a few MAPP members have active life extension programs, although more report looking at the concept as a way to delay major new generation construction programs. About 18 percent of MAPP utilities are actively engaged in life extension work.

Most new generation will be needed after the mid-1990s, but a third of MAPP utilities have not yet determined when new capacity will be needed, nor what size addition ap-

Continued on page 13

PROJECTED 5-YEAR CAPITAL EXPENDITURES By NERC Region - in \$ millions						
Region	1987	1988	1989	1990	1991	5-Year total
ECAR	\$ 3,826	\$ 3,308	\$ 3,232	\$ 2,667	\$ 1,758	\$ 14,591
ERCOT	2,014	2,432	1,192	1,183	1,049	7,870
MAAC	2,488	2,502	2,381	2,304	1,505	11,270
MAIN	2,039	1,425	1,114	1,149	611	6,338
MAPP	1,008	899	984	966	869	4,726
NPCC	2,628	2,266	2,016	1,752	1,584	10,246
SERC	6,024	5,527	5,197	5,581	6,029	28,358
SPP	1,554	1,521	1,417	1,454	1,677	7,623
WSCC	7,229	7,029	6,657	6,830	6,191	33,936
Total	\$28,610	\$26,998	\$24,189	\$23,886	\$21,276	\$124,959

PROJECTED 5-YEAR CAPITAL EXPENDITURES By Function - in \$ millions						
	1987	1988	1989	1990	1991	5-Year total
Generation	\$13,047	\$11,318	\$ 9,625	\$ 9,170	\$ 7,853	\$ 51,013
Substations	1,391	1,531	1,236	1,187	951	6,296
Transmission	2,880	2,842	2,752	2,516	2,126	13,116
Distribution	7,198	7,368	7,084	7,449	6,909	36,007
Other	4,094	3,939	3,492	3,565	3,437	18,527
Total	\$28,610	\$26,998	\$24,189	\$23,886	\$21,276	\$124,959

Capital spending report . . . from page 12

pears likely. The most-mentioned size currently is 100 Mw or smaller, although at least one unit rated higher than 600 Mw appears likely before the end of the century.

NPCC



	Gen	T&D	Other
1987	286	1,253	583
1988	418	1,407	440
1989	383	1,311	311
1990	331	1,128	283
1991	379	830	274
5-yr total	2,398	6,030	1,992

With generating reserve margins estimated above 25 percent for the 1987-1991 period, Northeast Power Coordinating Council utilities have reduced their planned capital expenditures for power generation. According to *EL&P* projections, NPCC utilities will spend \$2.3-billion for generation additions and upgrades. At the same time, better than 2.5-times that amount—\$6-billion—for power delivery facilities. NPCC utilities also will spend \$1.9-billion for other capital programs during the five years.

SERC



	Gen	T&D	Other
1987	3,425	1,911	888
1988	2,800	2,057	669
1989	2,534	2,046	616
1990	2,706	2,205	670
1991	2,971	2,381	697
5-yr total	14,437	10,591	3,341

The Southeastern Electric Reliability Council is the largest NERC area for demand and capacity, but ranks second in current capital investment. During the next five years, SERC utilities will remain in a growth mode, with demand increasing about 2.5 percent per year. To meet the demand increases, SERC utilities will invest \$14.4-billion in new and upgraded generation facilities over the next five years, on a declining basis for the first three years, then increasing for the last two years of the period. During the period, SERC utilities will invest \$10.6-billion for power delivery facilities, beginning with \$1.9-billion in 1987 and increasing every year through the period. SERC utilities will invest a total \$28.4-billion during the five-year period, the second highest of all NERC areas.

SPP



	Gen	T&D	Other
1987	418	873	262
1988	324	901	295
1989	288	849	280
1990	274	889	291
1991	443	932	303
5-yr total	1,748	4,443	1,431

Southwest Power Pool utilities will devote the majority of their five-year capital investment to power delivery facilities. They will spend some \$4.4 billion for substations and T&D lines, with annual investment increasing steadily throughout the period. Generation spending, projected at \$1.75-billion for the five years, will decline for the first four years, then pick up slightly in 1991. Total spending by SPP members will be \$7.6-billion.

Less than half of SPP utilities currently are involved in life extension projects, but a number are studying potential life extension work.

New capacity will be required in the SPP area after 1992.

WSCC



	Gen	T&D	Other
1987	2,084	3,696	1,448
1988	1,884	3,892	1,353
1989	1,712	3,708	1,236
1990	1,872	3,687	1,271
1991	1,470	3,314	1,407
5-yr total	9,122	10,098	6,716

The Western States Coordinating Council is the largest of the NERC regions in geographic area and magnitude of capital investment. It also

remains one of the faster growing regions in the country. During the next five years, WSCC utilities will invest almost \$34-billion for new and upgraded facilities. The largest portion, \$18-billion, will be devoted to power delivery facilities. Generation spending, \$2.1-billion in 1987, will decrease steadily through the period.

WSCC utilities will need new capacity steadily to 2000 and beyond. Although some new, large, baseload capacity will be needed after 1996, the majority of capacity projected to be added through 2000 will be between 50 Mw and 400 Mw in size. More than half the utilities reporting said that while they anticipate need for new capacity, they cannot yet estimate the sizes of the units they will require.

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Nuclear Regulatory Commission staff reorganized

WASHINGTON—Reflecting a change in its primary role, Nuclear Regulatory Commission Chairman Lando W. Zech, Jr. recently announced a reorganization of the NRC staff.

He said the new organization will focus the agency's major program offices on the day-to-day safety of the nuclear plants and make them more accountable for the NRC's safety programs.

"Our mission is far different today than it was in 1975 when the NRC was created. We have shifted from evaluation of construction permit and operating license applications to the regulation of a maturing operational industry," stated Zech. "As the plants

presently in the final stages of construction are completed, we will have progressively less regulatory actions with large complex construction facilities and much more involvement with plant operations, maintenance, life extension and other operational issues."

The Office of Inspection and Enforcement is being dismantled and its functions transferred to the Executive Director of Operation, the Office of Nuclear Reactor Regulation and the Office of Nuclear Materials Safety and Safeguards.

Also, said Zech, the NRC's enforcement functions will be transferred to a new Office of Enforcement.

A new Office of Governmental and

Public Affairs will be created that will coordinate the functions of the current Office of Congressional Affairs, the Office of Public Affairs, the Office of State Programs, and the Office of International Programs.

The NRC will expand the role of the Office of Analysis and Evaluation of Operational Data. Zech explained it will be a focal point for the continuing assessment of the safety of operational facilities, and will manage the review, analysis, and evaluation of reactor plant performance.

Responsibility for the resolution of generic safety issues will be assigned to the Office of Nuclear Regulatory Research.

The chairman announced that Har-

old Denton will head the Office of Governmental and Public Affairs; Victor Stello will be named Executive Director for Operation; and, Eric Beckjord will be head of the Office of Nuclear Regulatory Research.



NRC Chairman Lando Zech

Winter peak ... from page 1

ing 3,260 MW, are expected to enter commercial operation during the winter period. NERC pointed out that notable installations are the Limerick 1 nuclear unit and the first phase of a de tie from Quebec into New England, which provides a new 690 MW source to that area.

Comanche Peak ... from page 1

According to Moody's, TUEC has managed its business risk well. However, said the ratings agency, further licensing delays and cost increases will continue to put pressure on cash flow and increase external financing requirements.

A detailed reanalysis, reinspection, and corrective action effort at the plant has been underway since late 1984.

Initial rate increase

Texas Utilities said it will try and hold the initial rate increase when Unit 1 comes on-line to 10 percent.

The utility said its new cost estimate takes into account the cost of money used to finance the plant's construction, cost of the reinspection and corrective action effort, engineering and construction costs and ongoing expenses.

"The construction and adequacy part of the program is essentially finished and the design adequacy review is in process," said Michael D. Spence, president of TUEC's Generating Division. "At the conclusion of this program, we will be able to assure ourselves and the Nuclear Regulatory Commission that all safety concerns have been identified and corrective actions completed."

The company estimates it will need approximately 11.8 million kilowatts of new generating capacity to serve its customers by 1996.

TUEC, a subsidiary of Texas Utilities Company, owns 87 1/2 percent of the plant. Remaining interest is owned by Texas Municipal Power Agency, Brazos Electric Power Cooperative, Inc., and Tex-La Electric Cooperative of Texas, Inc.

Other units delayed

Also, the company reported that its Twin Oak Unit 2 plant will go into service in 1993 instead of 1992, and the single-unit Forest Grove plant will go into service in 1994 instead of 1993. In addition, the company announced it will not build a fourth unit at its Martin Lake plant.

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